A CASE OF DIABETES MELLITUS WITH SYPHILIS.

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In the summer of 1918 a special diabetic service was established in this general hospital, under the direction of Capt. Frederick M. Allen, for receiving cases of diabetes developing among the military and naval forces. The case described below was observed while the writer was acting as ward surgeon on this service, and is presented on account of points of diagnostic and therapeutic interest in connection with the complicating or causative factor, syphilis.

Case History. Lieut., U. S. N. R. F., aged forty-three years, American ancestry. Family history is negative except for obesity, which was absent in the father, moderate in the mother and also in the five brothers in about the same degree as in himself. Height of patient, 5 feet 8 inches; maximum weight, 196 pounds. He has had no known infections except mumps and diphtheria in childhood. Married twelve years; one healthy child, aged eleven years; not obese; no miscarriages by wife. The patient has seen tropical service for several years as engineer of steamers in the West Indian trade; no tropical diseases known. Venereal infection is positively denied and no suggestive symptoms elicited on careful questioning.

Present Illness. December 18, 1917, on board ship, the patient suffered a definite acute onset of weakness, loss of weight, general malaise, polyuria, polydipsia and loss of appetite, so that he ate chiefly fruit for several days before reaching port. There his family physician diagnosed diabetes and acute pancreatitis, and subsequently, in view of the later developments, sent word through the patient to emphasize the latter diagnosis; grounds for making it not learned. An eleven-day fast was imposed, glycosuria ceasing on the ninth or tenth day. Graduated diets were instituted, following the Hill and Eckman manual. After three months the patient was able to resume duties as engineer, at a weight of 150 pounds. He now felt entirely well, was able to follow diet on shipboard, and remained free from glycosuria.

June 2, 1918, his vessel was torpedoed, and he was exposed to cold and hunger in an open boat for forty-six hours. On reaching land he received the same high diet given the other survivors, and intense diabetic symptoms promptly returned. He arrived home in a serious state of weakness, and the same physician resumed treatment, with fasting, low diet and sodium bicarbonate. Enlargement of the liver was now found and marked ascites rapidly developed. Treatment was entirely unsuccessful, because the ascites and some general edema were taken to indicate that the patient was too weak to bear fasting. Drugs, such as digitalis, pituitrin and increasing doses of sodium bicarbonate, were tried in vain. Accordingly, more or less glycosuria and acidosis were allowed to continue on a restricted diet, and an early fatal outcome was anticipated.

The patient was admitted to this general hospital in this condition, September 5, 1918. Weight 130 pounds, with a combination of slight general edema and a large ascites which distended the abdomen to the maximum. Careful examinations were made by various members of the medical and surgical staffs, with results negative except as follows: complexion, slightly yellow and also dusky, especially on the exposed surfaces, said to be due to exposure to weather. No jaundice or pigment patches on the skin or mucous membranes. Special sense organs, normal. Nervous system: knee-jerks absent or feebly present; marked myotonia reaction; no lumbar puncture performed. Thyroid and heart normal, also glandular system, except small palpable inguinal nodes. Lungs clear, but both pleural cavities contained movable fluid up to the sixth rib posterior, encroaching seriously on the aeration space of the lungs and pushing the heart upward. The left lobe of the liver was plainly palpable through the thin abdominal wall, moderately firm, smooth or very slightly nodular on the surface, and entirely free from pain or tenderness. The fairly sharp edge descended to about 5 cm. above the umbilicus and passed upward under the left costal margin in the left mammary line. No enlargement of the right lobe was demonstrable. It was impossible to investigate the other abdominal viscera on account of the ascites.

Laboratory reports were received as follows: Plasma sugar, 0.400 per cent.; CO_2 combining power 75.8 volume per cent. Blood count: hemoglobin, 56 per cent.; red blood cells, 4,130,000; leukocytes, 7400. Differential count: small mononuclears, 56 per cent.; large mononuclears, 9 per cent.; transitional, 4 per cent.; polymorphonuclears, 31 per cent.; Wassermann negative.

It was immediately obvious that the condition was diabetes of considerable severity, accompanied by a slight bicarbonate or salt edema, and ascites due to some unknown abdominal cause, the chief suspicion pointing to the liver. The explanation of the hydrothorax also probably lay in one or the other of the above-mentioned conditions.

Treatment was begun accordingly by fasting, mitigated with clear soup, coffee and bran muffins, omitting both sodium bicarbonate and sodium chloride. The fast was well borne, glycosuria clearing on the sixth day, while ketonuria continued for fourteen days. The general edema promptly cleared and the hydrothorax gradually lessened, but the ascites remained practically unchanged. The patient was now given a diet consisting of protein 40 grams and carbohydrate 10 grams, fat being excluded. The protein intake was later advanced to 60 grams and fast-days were interpolated frequently. After one month of such treatment the plasma sugar remained in the neighborhood of 0.200 per cent. The patient improved in strength and spirits, but experienced considerable difficulty in walking on account of the heavy, distended abdomen. The fluid in the chest had entirely cleared at this point. A barium series was taken, the radiogram failing to locate any abnormality. Paracentesis abdominis was performed, four liters of clear amber-colored fluid being withdrawn and about an equal quantity left, because of threatened collapse. The laboratory report on the ascitic fluid was as follows: specific gravity, 1020; cell count, 1760 per cm. Differential count: red cells, 9 per cent.; polymorphonuclears, 27 per cent.; small mononuclears, 38 per cent.; large mononuclears, 19 per cent.; transitionals, 9 per cent.; bile reaction negative. Guinea-pig injection was negative for tuberculosis. The fluid rapidly reaccumulated and the abdominal distention again reached the maximum.

From October 1 to December 11 a low protein-fat diet was given, strictly carbohydrate-free, the daily intake never exceeding 1500 calories. There was an occasional trace of sugar in the urine and the plasma sugar remained persistently high. The diagnosis of the unknown abdominal condition meantime called for consideration of various possibilities, including cancer, peritoneal tuberculosis, with or without Addison's disease, syphilis, hemochromatosis, simple hypertrophic cirrhosis, hepatic cyst, etc.

December 11, 1918, a second paracentesis was performed and about six liters of clear amber fluid withdrawn. Wassermann on the fluid was two plus (army nomenclature), other findings not varying from the previous report. The entire abdomen was now easily palpated and the only abnormality noted by several observers was the asymmetrical enlargement of the left lobe of the liver. A provocative dose of salvarsan was administered and after three days the blood Wassermann was one plus (army nomenclature). The patient was placed on very active treatment, with potassium iodide and mercury pushed rapidly to tolerance. The diet during this *régime,* December 20 to January 20, was cut to 60 grams of protein and fat enough to make 600 calories, carbohydrate-free. The left lobe of the liver steadily diminished to 3 cm. below the xiphoid cartilage and the ascites mostly disappeared, no further paracentesis being necessary.

At present the patient is in good spirits and fair state of nutrition, despite the long and rigid dietary *régime.* The therapy resolves itself into two distinct lines. The low-calory protein-fat diet has been continued to the present, and it is noteworthy that the blood sugar is now approaching the normal (0.12 per cent., February 2, 1919) for the first time following five months of strict dietary regulation and one and a half months of antiluetic treatment.

Two lessons may be pointed out from the experience with this case:

(1) though probably diabetes is relatively infrequently due to syphilis, search for this cause, whether inherited or acquired, should be carefully made by all possible means, and merely a negative Wassermann reaction in the blood should not be accepted as excluding it; (2) diabetes, particularly in the advanced stage, may not be (and probably as a rule is not) perceptibly altered by antiluetic treatment. This is logical from the fact that syphilis here presumably produced fibrous changes in the pancreas just as it did in the liver. What can be hoped from such therapy is the checking of further advance of the infectious process, not the repair of existing damage and the improvement of the diabetes. Such cases stand practically on the same plane as diabetes from other causes, and the same dietary control is necessary. It will be noted that the diabetes in this case is of marked severity, as shown by the minimal tolerance acquired in long treatment. The patient has been benefited in respect to strength, comfort and presumably longevity, but the ultimate outcome in view of the advanced conditions present is dubious.